

Impact of AI on Human Psychology

¹Prof. Gaikwad Anil Pandurang, ²Prof. Kakpure Krutika Balam, ³Dr. Gawali Ravindra Bhaskar, ⁴Prof. Jadhav Meenakshi Pramod, ⁵Dr. Tambe Prashant Radhakrishna

¹Assistant Professor, MCA Department,
JSPM'S Jayawantrao Sawant College of Engineering, Savitribai Phule
Pune University Maharashtra (India)

²Assistant Professor, MCA Department,
JSPM'S Jayawantrao Sawant College of Engineering, Savitribai Phule
Pune University Maharashtra (India)

³Associate Professor, MBA Department,
Amrutvahini Institute of Management and Business Administration,
Savitribai Phule Pune University Maharashtra (India)

⁴Assistant Professor, MCA Department,
Sinhgad Institute of Management,
Savitribai Phule Pune University, Maharashtra (India)

⁵Director MBA & MCA, ATE'S Technical Campus,
Akole, Ahmednagar, Savitribai Phule Pune University, Maharashtra (India)

Abstract

AI has rapidly advanced, transforming many elements of human life and society. AI aids healthcare, transportation, and communication, but its effects on human psychology are still debated. This article summarizes AI's effects on human psychology and discusses potential psychological effects. AI has changed human-machine interaction. Intelligent virtual assistants, chatbots, and social robots are creating new human-machine partnerships. These interactions often induce social closeness, trust, and emotional attachment. However, blurring human-machine barriers can also cause isolation, dehumanization, and distrust. AI has changed work. Workers worry about job displacement and skills obsolescence due to automation and AI integration, causing stress, anxiety, and fear of unemployment. Upskilling and job changes might raise psychological stress. AI affects human psychology in privacy, data security, and identity. AI systems' massive data collection and processing pose privacy issues and the possibility of mind control. Concerns about personal information might increase anxiety, self-censorship, and a loss of control. Policymakers, developers, and academics must understand how AI affects human psychology to manage ethical and psychological issues. To create a future that supports human well-being, we must identify and mitigate AI technology's negative psychological effects while leveraging its benefits. The study aims to explore the multifaceted ways in which AI affects human psychology, specifically focusing on MBA students in terms of ethical & psychological implications & to examine the changing skill requirements, job market uncertainties, decision-making dynamics, and human-machine collaboration

Keywords: Artificial Intelligence, AI, Human psychology, Psychological consequences, ethical implications

Introduction

The rise of artificial intelligence (AI) as a revolutionary force that is transforming various facets of human existence and society has occurred in recent years. Artificial intelligence technologies are altering how we live, work, and interact in every aspect of our lives, from intelligent virtual assistants and autonomous vehicles to powerful data analytics and decision-making systems. The impact that artificial intelligence (AI) has on human psychology is becoming a topic of significant interest and worry. This is despite the fact that the benefits of AI are visible in greater efficiency, convenience, and problem-solving capabilities. This study offers a comprehensive introduction to the influence that artificial intelligence (AI) has on human psychology, focusing on the primary areas of influence as well as the potential psychological repercussions.

Interaction between Humans and Machines

The development of AI technology has resulted in the emergence of new modes of human-machine interaction. Intelligent virtual assistants like Siri, Alexa, and Google Assistant are becoming more widespread. These assistants

provide individualized support and companionship and have become increasingly popular. These exchanges have the potential to evoke psychological responses such as a sense of trust, emotional attachment, and social connection. (Hoffman & Breazeal, 2019) Research has revealed that individuals may engage in anthropomorphism, or the practice of attributing human-like attributes to artificial intelligence (AI) systems. This can lead to increased involvement with and dependence on these technologies. According to Larson et al. (2018), the blurring of lines between human and machine can also have negative repercussions, such as producing feelings of isolation, dehumanization, or distrust.

Making Decisions and Being Prejudiced

In important decision-making processes, such as those involving hiring and financing, as well as those involving the criminal justice system, the use of algorithms driven by AI is becoming increasingly common. Even if AI systems have the potential to improve objectivity and efficiency, it is also possible for them to demonstrate biases due to the training data or the algorithms themselves. Concerns concerning justice and equity are raised as a result of this. When decisions made by AI systems do not fit with individuals' expectations or ideals, those individuals may feel as though they have been treated unfairly or discriminated against. According to Barocas and Selbst (2016), the results can include a reduction in the individual's level of trust in the decision-making process, a loss of autonomy, and psychological suffering. In addition to this, individuals may lose faith in their own capacity for sound judgment and decision-making if they place an excessive amount of dependence on AI systems (Nunes et al., 2021).

Work and Job Opportunities

There will be substantial repercussions for employment as well as the emotional health of workers as a result of the introduction of AI technology into the workforce. There are growing concerns regarding the displacement of jobs and the obsolescence of skills as a result of the rising use of automation and AI-driven systems to replace human labor. (Davenport & Kirby, 2016) Research has shed light on the psychological strain, worry, and dread of joblessness that are experienced by persons who are confronted with the possibility of being made redundant by technology advances. According to research by Lombardi et al. (2019), the necessity of workers to acquire extra skills and adapt to ever-evolving workplace requirements might produce additional psychological stresses and obstacles.

Privacy, protection of personal data, and protection of personal identity

Artificial intelligence requires large volumes of individual data for the purposes of both training and making decisions. This raises worries over the possibility for individuals' attitudes and behaviors to be manipulated, as well as potential breaches of privacy and data security. According to Powell and Milstein's research from 2020, when AI systems collect and analyze personal data, it can result in increased anxiety, self-censorship, and a weakened sense of control over one's own personal information. The gradual loss of one's privacy can have substantial psychological repercussions, which can affect one's trust in both technological and society organizations.

Review Literature

The piece by **Krupiy (2020)** looked at the effects of how artificial intelligence (AI) makes decisions on different things, with a focus on social justice. The author did a vulnerability study to find out how AI decision-making affects people, society, and the differences between people. The study looked at how AI systems might cause bias, discrimination, and inequalities, and how they might affect marginalized groups. The story talked about how important it is to look at the ethical aspects of AI, such as concerns about privacy, fairness, accountability, and the balance of power between AI systems and humans. It emphasized the need to look at these problems from a social justice point of view to make sure that everyone gets a fair result and to avoid making social differences worse. The study helped us learn more about the social effects of how AI makes decisions. It shed light on potential problems and gave us ideas about how to promote social justice in the creation and use of AI technologies.

The researchers **Siebert, Kunz, and Rolf (2020)** investigated the connection between making proactive decisions and experiencing higher levels of life satisfaction. The authors of this study carried out research in the form of a massive survey to investigate the question of how individuals' proactive decision-making activities influence their overall level of happiness with life. According to the findings of the study, those who engage in proactive decision-making, which is characterized by actively seeking information, considering alternatives, and taking initiative in decision-making processes, tend to have better levels of life satisfaction than those individuals who do not. The ability to make proactive decisions was found to have a favorable association with a sense of autonomy, as well as self-efficacy

and perceived control. The study underlined how important it is to take an active approach to decision-making, and it implies that persons who are proactive in their decision-making processes have greater levels of fulfillment and pleasure in their lives. The findings contributed to a better understanding of the psychological elements that influence life satisfaction and highlighted the advantages of proactive decision-making in terms of boosting overall well-being. Individuals are encouraged to take an active position in their decision-making processes in order to improve their overall quality of life as a result of the findings of the study, which provided insights into the positive benefits that proactive decision-making may have on life satisfaction.

The ethical considerations that are associated with the application of artificial intelligence (AI) in the field of medicine were discovered by **Keskinbora (2019)**. The purpose of this study was to examine the implications and difficulties that are brought about by the incorporation of AI into healthcare settings. The focus of the study was on the junction of artificial intelligence and medical ethics. According to the findings of the study, the use of AI in the medical field requires the collecting and examination of enormous volumes of patient data. It is absolutely necessary to take measures to protect the privacy of patients and sensitive medical information in order to preserve patient confidentiality and confidence. Additionally, Keskinbora underlined that AI systems can be prone to biases, which might result in discrimination or unequal treatment in the medical field. To ensure justice and equal outcomes in healthcare, efforts should be undertaken to identify biases in AI algorithms and minimize the effects of those biases. The application of AI to the process of making medical decisions raises concerns about responsibility and accountability. It is vital to establish clear lines of accountability for AI-driven systems, including the roles and duties of AI developers as well as healthcare practitioners. There is a possibility that the integration of AI will have an effect on the professional autonomy of healthcare practitioners. When it comes to striking the right balance between human judgment and recommendations generated by AI, there are several ethical factors to take into account. The research highlighted the importance of establishing a thorough ethical framework to direct the development and application of AI technologies in the medical field. This demonstrates how important it is to address these ethical problems in order to guarantee the responsible and ethical application of AI in clinical settings. The findings of the study shed light on the ethical implications associated with using AI in healthcare and provide insights into the issues that need to be taken into account to ensure ethical and responsible integration of AI in the medical profession. The study was conducted to investigate the ethical implications associated with using AI in healthcare.

Artificial intelligence (AI) was the subject of investigation in **Kaplan and Haenlein's (2019)** research study. Specifically, the authors zeroed in on the ubiquitous voice assistant Siri as an example to illustrate their findings. The writers investigate a variety of AI interpretations and their potential ramifications, touching on a variety of important themes. The purpose of this study was to investigate the various ways in which individuals and society understand and interpret AI. The article covers how some people view artificial intelligence as either a danger or a transformational technology that has the potential to improve human skills. The writers brought attention to the moral dilemmas that may arise from AI as well as its possible effects on society. Concerns including privacy, data security, algorithmic biases, and the impact on jobs and society as a whole are among them. The importance of developing and deploying AI in a responsible and ethical manner was underlined throughout the study. The study examined the changing dynamics of human-machine contact as well as the part that AI plays in determining the form of these encounters. It investigated the possibilities that artificial intelligence has for enhancing user experiences, personalizing service delivery, and enhancing decision-making procedures. Anthropomorphism, which is when people attach human-like features and emotions to artificial intelligence systems, was one of the topics that the writers investigated. They talked about the possible repercussions of these attributions, which included problems with trust, accountability, and emotional commitment to AI. The administrative ramifications of implementing AI are also discussed in this paper. It examines the challenges and opportunities that AI brings for businesses, such as the need for human and AI collaboration, strategic decision-making, and resource allocation.

When it comes to the processing of social and emotional information, **Esposito, Esposito, and Vogel (2015)** investigated the requirements and challenges related with human-computer interaction (HCI). The writers emphasized the growing significance of social and emotional intelligence in HCI systems, which are increasingly being developed to interact with users in more human-like ways. As a result, the authors noted the growing importance of social and emotional intelligence in HCI systems. According to the findings of the study, nonverbal clues, such as a person's tone of voice, facial expressions, and gestures are all important components of human communication. It is crucial for human-computer interaction systems to incorporate and comprehend these nonverbal cues in order to improve the

efficiency and naturalness of human-computer interactions. An essential part of human-computer interaction is being able to identify and make sense of human feelings. In order to facilitate more empathic and context-aware interactions, the article places an emphasis on the requirement for accurate and reliable emotion identification algorithms to be implemented in computer systems. The emotional responses of humans can vary substantially from one person to the next. In order to give users with experiences that are unique to them and customised to their specific needs, HCI systems need to take into account these individual characteristics and adjust their responses accordingly. It is essential for human computer interaction (HCI) systems to be able to interpret social and emotional data in real time if they are to preserve the natural flow of interaction. It's possible that the user's engagement and overall pleasure would suffer if they receive delayed or erroneous responses. The research highlighted how important it is for human computer interaction (HCI) systems to successfully include social and emotional information in order to provide interactions that are more engaging, natural, and individualized. In addition to this, it brought to light the difficulties and ethical concerns that are linked with the processing of various kinds of information. It paved the way for more empathic and successful human-computer interactions by providing insights into the needs for designing HCI systems that are more responsive to human emotions and providing a pathway for more effective human-computer interactions.

Research Methodology

The secondary & primary both sources has been used to gather information. Quantitative research design has been used. Respondents has taken from JSPM'S Jayawantrao Sawant College of Engineering, Pune, Maharashtra (MBA students). Total 110 students participated in survey. Where number of male students was 65 & number of female students was 45. T-test has applied for analysis on the bais of mean & standard deviation.

Problem Statement

The science of artificial intelligence (AI), also known as machine learning, is evolving at a breakneck pace and has profound consequences for many facets of human existence, including psychology. Understanding how artificial intelligence technologies influence human psychology is becoming increasingly important as they continue to spread across a variety of business sectors and fields. The combination of artificial intelligence and psychology gives rise to a number of fascinating concerns regarding how individuals perceive, interact with, and adapt to AI-driven systems. This impact becomes especially crucial for MBA students since they are ready to negotiate the increasingly complicated corporate landscape, which is being influenced more and more by AI. This discussion aims to explore the multifaceted ways in which AI affects human psychology, specifically focusing on MBA students. By examining the changing skill requirements, job market uncertainties, ethical considerations, decision-making dynamics, and human-machine collaboration, we are able to improve our understanding of the psychological repercussions of integrating AI and the importance of this topic to the field of MBA education. Once we have a greater understanding of these implications, we will be better able to prepare MBA students to prosper in a future driven by AI, both emotionally and professionally.

Objective of the study

- To find impact becomes particularly relevant for MBA students who are preparing to navigate the complex business landscape, where AI is increasingly influential.
- To explore the multifaceted ways in which AI affects human psychology, specifically focusing on MBA students in terms of ethical & psychological implications.
- To examine the changing skill requirements, job market uncertainties, decision-making dynamics, and human-machine collaboration

Hypothesis of the study

H1 : There is no positive differences about ethical considerations between male & female in terms of impact of AI” is accepted.

H1 : There is positive differences about ethical considerations between male & female in terms of impact of AI” is accepted.

H2 :There is no positive differences about major common considerations between male & female in terms of impact of AI” is accepted.

H2 :There is positive differences about major common considerations between male & female in terms of impact of AI” is accepted.

H3 :There is no positive differences about psychological considerations between male & female in terms of impact of AI” is accepted.

H3 :There is positive differences about psychological considerations between male & female in terms of impact of AI” is accepted.

What are the moral and psychological consequences of the relationship between AI and people?

The interaction between human beings and artificial intelligence systems (AIS) raises a number of moral and psychological questions that need to be thought through carefully. Several important aspects are as follows:

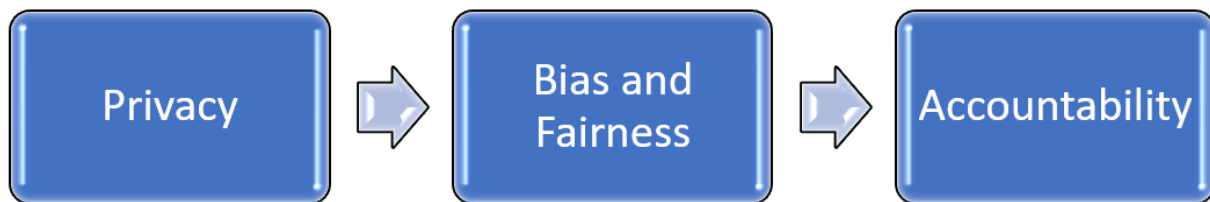


Figure 1: Factors of Ethical Implications

- AI systems frequently rely on enormous amounts of data, which raises worries about personal information privacy as well as the possibility of its misuse or access by unwanted parties. The establishment of trust and the maintenance of an ethical approach to data processing become essential issues.
- Fairness and Bias: Unintentionally, AI systems might unintentionally perpetuate biases that are already present in the data that they are trained on, which can lead to biased results. Concerns have been raised regarding the fairness and equity of decisions that have been driven by AI, which has resulted in the need for initiatives to address and mitigate bias.
- When AI systems make decisions, who is responsible for such decisions becomes a complicated question. It might be difficult to determine who is liable for errors, biases, or undesirable repercussions; therefore, transparent frameworks are required in order to distribute responsibility in an acceptable manner.

Psychological Implications:

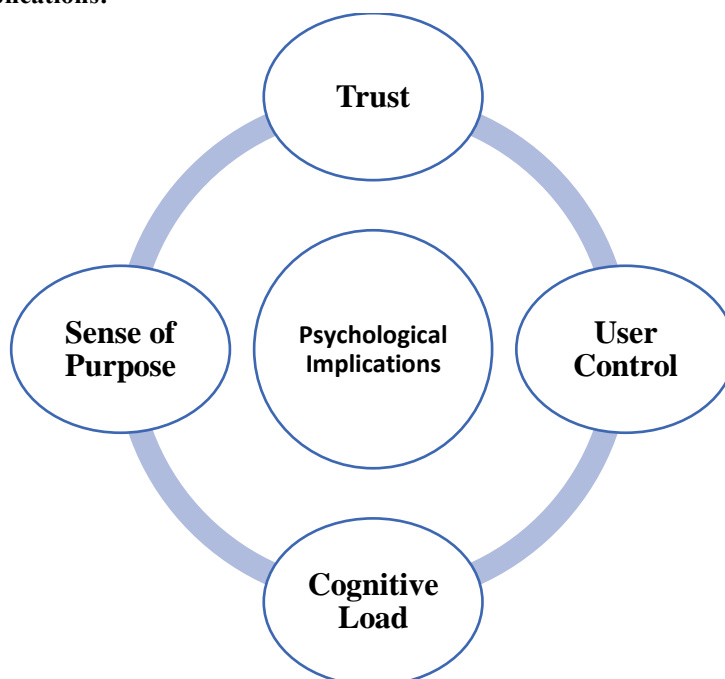


Figure 2: Factors of Psychological Implications

- There is a considerable psychological component involved in the building of trust between human beings and AI systems. Users need to have faith in the capabilities, dependability, and intentions of AI systems in order for those systems to effectively communicate and collaborate with users.
- The degree of control that a person feels they have over AI systems can have an effect on the mental health of that person. If users feel that they do not have influence over the processes or decisions that are driven by AI, they may suffer irritation or a loss of empowerment.
- Individuals may have increased cognitive load as a result of interacting with AI systems because this interaction requires them to comprehend, understand, and validate the results produced by AI. The mental effort required to absorb and integrate information driven by AI can have an effect on decision-making as well as the overall cognitive well-being of an individual.
- There is a potential for existential issues regarding human purpose and agency to be prompted by the growing role of AI systems in a variety of sectors. It is possible that people will struggle with the feeling of being replaced or undervalued by AI, which would require them to reevaluate their personal identity and the significant contributions they make.

Because of these ethical and psychological ramifications, it is essential that artificial intelligence systems be designed, developed, and deployed responsibly. To cultivate trust, transparency, and a harmonious relationship between AI systems and humans, it is essential to find a balance between technology progress and human values. To ensure the successful incorporation of AI into society, it is essential to address these issues by developing ethical rules, stringent restrictions, continuous educational programming, and a strategy that draws from other disciplines.

Challenges of Artificial Intelligence (AI) on human psychology

The influence of artificial intelligence (AI) on human psychology presents a number of issues, all of which must be recognized and tackled in order to be successfully overcome. Artificial intelligence (AI) has a large number of chances for technological advancement and improvement; nevertheless, it may also create certain psychological difficulties.

This section highlights some key challenges posed by AI on human psychology:

Trust and Reliance: As AI systems become more and more integrated into different parts of daily life, people may find it hard to trust and depend on them. Users must trust AI systems in order to fully accept and use them. But worries about how accurate, fair, and free of bias AI algorithms are can make people less likely to believe them and hesitant to rely on decisions made by AI (Hoffman & Breazeal, 2019). Overusing AI systems can also make people lose faith in their own sense and ability to make decisions (Nunes et al., 2021).

Emotional Impact and Connection: AI systems are made to interact with humans in ways that mimic emotions and build connections. But there is a chance of making shallow emotional ties that don't meet the real emotional needs of people. (Larson et al., 2018) say that people may form emotional ties to AI systems or show anthropomorphism by giving these machines human-like traits. This blurring of the lines between humans and machines can cause psychological problems, such as confusion about social rules and expectations, feelings of being alone, or a sense of being less human.

Psychological Effects of Automation: When AI and automation are combined in the workplace, it can cause psychological problems like job loss, loss of skills, and doubt about a career path. (Davenport & Kirby, 2016) say that the fear of technological unemployment and the need to adapt to new job requirements can cause a lot of stress, anxiety, and a loss of a sense of personal satisfaction and identity. Job insecurity and pressure to learn new skills or take on new jobs can have a big impact on a person's mental health.

Concerns about privacy and data security: AI systems often use huge amounts of personal data to learn and make decisions. Concerns about privacy, data security, and the possible misuse of personal information are raised by the gathering and analysis of such data. Powell and Milstein (2020) say that people may feel more anxious, limit themselves, and lose control over their own data and sense of self. In a world run by AI, it's important for people's mental health and trust in technology that they can keep their privacy.

Ethical and Bias Considerations: AI systems are not immune to flaws in their training data or algorithms. AI systems that are biased can reinforce and make social biases worse, which can lead to discrimination and unfair results. Barocas and Selbst (2016) say that the psychological effects of biased AI can include a sense of wrong, a loss of trust in systems that make decisions, and a sense of being left out or discriminated against. To

solve these problems, it is important to deal with biases and make sure that AI is designed in a responsible way.

It is necessary to understand these issues and find solutions to mitigate them in order to maximize the potential benefits of AI while simultaneously protecting the psychological well-being of individuals and the trust of society. To design and execute AI systems that promote openness, justice, privacy, and human-centric values, interdisciplinary collaboration among psychologists, ethicists, policymakers, and engineers is required.

Results & Discussion

Table 1: Results of t- test of significant difference for the Parameters of Ethical Implications

Parameters (Ethical Implications)	Gender	Mean	S.D.	t	Sig. (2-tailed)
Privacy	MBA Students (Male)	2.687	0.737	1.723	0.875
	MBA Students (Female)	2.593	0.631		
Bias and Fairness	MBA Students (Male)	1.731	0.762	0.561	0.819
	MBA Students (Female)	1.849	0.834		
Accountability	MBA Students (Male)	2.561	0.694	0.094	0.775
	MBA Students (Female)	2.612	0.703		

As per above table 1, a ethical implications construct containing 03 different impacting behaviour i.e. privacy (t value = 1.723), bias and fairness (t value = 0.561), accountability (t value = 0.094), and all plays a major role in ethical consideration. It has been observed that all parameters having high T-value as comparison to significant value i.e. 0.05). Therefore, alternate hypothesis, “there is positive differences about ethical considerations between male & female in terms of impact of AI” is accepted.

Table 2: Results of t- test of significant difference for the Parameters of Psychological Implications

Parameters (Psychological Implications)	Gender	Mean	S.D.	t	Sig. (2-tailed)
Trust	MBA Students (Male)	2.736	0.596	1.871	0.678
	MBA Students (Female)	2.451	0.563		
User Control	MBA Students (Male)	1.898	0.864	0.664	0.729
	MBA Students (Female)	1.936	0.821		
Cognitive Load	MBA Students (Male)	2.116	0.644	0.189	0.783
	MBA Students (Female)	2.453	0.685		
Sense of Purpose	MBA Students (Male)	2.497	0.711	0.183	0.678
	MBA Students (Female)	2.578	0.806		

As per above table 2, a psychological implications construct containing 04 different impacting behaviour i.e. trust (t value = 1.871), user control (t value = 0.664), cognitive load (t value = 0.189), sense of purpose (t value = 0.183) and all plays a major role in psychological consideration. It has been observed that all parameters having high T-value as comparison to significant value i.e. 0.05). Therefore, alternate hypothesis, “there is positive differences about psychological considerations between male & female in terms of impact of AI” is accepted.

Table 3: Results of t- test of significant difference for the Parameters of major common Implications

Parameters (Major Common Implications)	Gender	Mean	S.D.	t	Sig. (2-tailed)
Changing skill	MBA Students (Male)	2.689	0.450	1.235	0.589

requirements	MBA Students (Female)	2.674	0.472		
Job market uncertainties	MBA Students (Male)	2.362	0.673	0.314	0.651
	MBA Students (Female)	2.225	0.761		
Decision-making dynamics	MBA Students (Male)	1.197	0.705	0.216	0.674
	MBA Students (Female)	2.560	0.698		
Human-machine collaboration	MBA Students (Male)	2.498	0.721	0.302	0.691
	MBA Students (Female)	2.557	0.785		

As per above table 3, a major common implications construct containing 04 different impacting behaviour i.e. changing skill requirements (t value = 1.235), job market uncertainties (t value = 0.664), decision-making dynamics (t value = 0.216), Human-machine collaboration (t value = 0.302) and all plays a major role in common consideration. It has been observed that all parameters having high T-value as comparison to significant value i.e. 0.05). Therefore, alternate hypothesis, “there is positive differences about major common considerations between male & female in terms of impact of AI” is accepted.

Findings of the study

- When social questions about the effects of AI were looked at, there were big differences between men and women. The data shows that men and women have different ideas about how AI affects moral issues. There could be disagreements about privacy, algorithmic bias, openness, and who is responsible for what.
- When the psychological effects of AI were looked at, there were big differences between men and women. This shows that men and women react to AI in different ways, such as with trust, fear, acceptance, or worries about their own freedom.
- When the major shared concerns about how AI will affect people were looked at, there were big differences between men and women. This means that men and women look at the effects of AI from different points of view. These big common things to think about could include things like job loss, economic effects, changes in society, or technological advances.

Recommendations:

- AI development organizations should include various ethical perspectives in decision-making, including gender diversity.
- Give men and women thorough ethical AI development and deployment training. This will bridge the ethical divide.
- Promote collaborative study on gender-specific ethical issues. This will improve inclusive and ethical AI systems.
- Develop AI systems that consider male and female psychological requirements and responses using psychology research and user-centered design. This improves consumer happiness.
- Address psychological issues and develop trust with open and sympathetic conversation. Explaining how AI systems work, their limitations, and privacy and security safeguards can help.
- Implement feedback mechanisms and assess AI's psychological effects on different genders. This will enable early detection and action.
- Take into account gender differences in AI impact assessments. This will improve repercussions understanding and enable focused mitigation efforts.
- Create AI policies that address male and female concerns and priorities. Consider employment, reskilling, and social assistance.
- Open debate and public involvement to educate and involve diverse groups, including men and women, in AI issues. This will improve understanding and consensus.

Conclusion:

In order to address the ethical, legal, and social consequences of AI, it is essential to have a solid understanding of how AI will affect human psychology. It is vital to take measures to reduce the potential negative psychological implications of AI, despite the fact that AI provides immense potential to improve human lives. It is

imperative that policymakers, developers, and researchers take into account ethical design principles, emphasize human well-being, and promote openness and accountability in artificial intelligence systems. We are able to take use of the beneficial elements of AI while mitigating the threats that may be posed to people's mental health if we use it in a responsible and people-focused manner. According to the findings of the study, male and female perspectives on the ethical implications of artificial intelligence are significantly distinct. This has good implications. This demonstrates how important it is to take into account a variety of viewpoints and to make certain that ethical principles and practices take into account issues that are associated with gender. The development of artificial intelligence systems that are not only technologically advanced but also take into consideration the psychological well-being and requirements of all humans requires an understanding of these differences. Recognizing the existence of these distinct points of view is essential to the process of formulating effective plans and policies that address the needs of all relevant stakeholders.

References:

1. Barocas, S., & Selbst, A. D. (2016). Big Data's Disparate Impact. *California Law Review*, 104(3), 671-732.
2. Davenport, T. H., & Kirby, J. (2016). *Only Humans Need Apply: Winners and Losers in the Age of Smart Machines*. Harper Business.
3. Esposito A, Esposito AM, Vogel C. Needs and challenges in human computer interaction for processing social emotional information. *Pattern Recognition Letters*, Rome. 2015;1-11.
4. Hoffman, G., & Breazeal, C. (2019). Guidelines for Designing Social Robots as Second-Order Moral Agents: Lessons from Studying AI in Education. *Frontiers in Robotics and AI*, 6, 74.
5. Kaplan A, Haenlein M. Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*. 2019;62:15–25.
6. Keskinbora KH. Medical ethics considerations on artificial intelligence. *Journal of Clinical Neuroscience*, Istanbul. 2019;64:277-282.
7. Krupiy T. A vulnerability analysis: Theorising the impact of artificial intelligence decision-making processes on individuals, society and human diversity from a social justice perspective. *Computer Law and Security Review*, Southampton. 2020;38.
8. Larson, K., Foster, J., & Gershman, S. J. (2018). The AI Misinformation Epidemic. *Distill*, 3(9), e17.
9. Lombardi, S., Giordani, S., Barbieri, A., Mazzoni, E., & Rubegni, E. (2019). *Artificial Intelligence and Robotics in Industry 4.0: International Conference Proceedings*. Springer.
10. Nunes, J., Chatterjee, S., & Tavana, M. (2021). Behavioral Implications of Human Interaction with Artificial Intelligence Systems. *Decision Support Systems*, 143, 113525.
11. Patra, J. P., Sethia, N., & Gupta, P. (2018). Home Assistant Using Artificial Intelligence. *Kaav International Journal of Economics, Commerce & Business Management*, 5(2), 40-43.
12. Powell, K., & Milstein, J. (2020). Big Data, Privacy, and Democracy: Privacy as a Public Good. *Science*, 367(6477), 1117-1119.
13. Sahoo, D. R., & Chauhan, M. (2023). Changing Landscape of Artificial Intelligence on Indian Corporate Sectors and Governance: Special Reference to SMEs. *Kaav International Journal of Law, Finance & Industrial Relations*, 10(1), 1-9. <https://doi.org/https://doi.org/10.52458/23492589.2023.v10.iss1.kp.a1>
14. Siebert JU, Kunz RE, Rolf P. Effects of proactive decision making on life satisfaction. *European Journal of Operational Research*, Poznan. 2020;280: 1171-1187.
15. Sharma, V., & Gupta, S. (2018). Artificial Intelligence as Socio-Technical Structure: An Analysis of Some Social Conundrums With Special Reference to Indian Society. *Kaav International Journal of Economics, Commerce & Business Management*, 5(2), 815-818.